

*Mr. Dorden*

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**BEFORE THE**

**OIL AND GAS**

**CONSERVATION BOARD**

**PROVINCE OF ALBERTA**


**IN THE MATTER OF THE GAS RESOURCES PRESERVATION  
ACT, BEING CHAPTER 19 OF THE STATUTES OF ALBERTA 1956**

**SUMMARY FILED ON BEHALF**

**OF THE**

**CITY OF CALGARY**

**RESPECTING EXPORT OF NATURAL GAS  
FROM THE PROVINCE OF ALBERTA**



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IN THE MATTER OF

THE GAS RESOURCES PRESERVATION ACT

- and -

IN THE MATTER OF

WESTCOAST TRANSMISSION COMPANY LIMITED  
ALBERTA & SOUTHERN GAS COMPANY LIMITED  
TRANS-CANADA PIPE LINES LIMITED

APPLICANTS

SUMMARY FILED ON BEHALF OF THE  
CITY OF CALGARY RESPECTING THE  
EXPORT OF NATURAL GAS FROM THE  
PROVINCE OF ALBERTA

The disposition of the present applications to export Alberta's natural gas raises what is probably the most important problem which has presented itself for decision since the formation of this Province.

The people of this Province see vast quantities of natural gas being produced, as it were, at their very doorstep. They therefore feel that this gas is part of their heritage and that they are entitled to it in priority to people living elsewhere and at a lower price than it costs elsewhere. This is a reasonable assumption because no doubt the people of California are able to get fruit and vegetables at prices less than the people of this Province pay and the people of Brazil get cheaper coffee, just to pick out two examples.

The oil and gas producers in this Province are in the main subsidiaries of United States corporations and any substantial increase in the price of oil or gas results in profits which find their way, at least in a great measure, back to the parent companies. This is an economic result from the fact that it is largely these corporations which have developed our resources.





At the present time three large transmission pipe line projects are seeking to take Alberta gas to distant places. Westcoast Transmission Company Limited (herein referred to as "Westcoast") wishes to take the gas to Los Angeles and southern California with some minor deliveries in eastern British Columbia, Alberta and Southern Gas Company Limited (herein referred to as "Alberta and Southern") wishes to take the gas to San Francisco, and Trans-Canada Pipe Lines Limited (herein referred to as "Trans-Canada") wishes to take the gas and sell it across Canada and also the Mid Western United States.

It is a well known fact that where a large transmission line passes through a territory that it creates a monopoly for the taking of all gas in its vicinity since it is uneconomical to deliver such gas to a more distant purchaser.

This monopolizing of certain territories has resulted in a necessity for the control of long distance transmission lines. In the United States both the purchase price and sale price as well as all other factors relative to such transmission lines come under the control of the Federal Power Commission.

However, it should be observed that all of the petroleum and natural gas leases issued by the Crown in Alberta in the last ten years have an express provision in them that the lessee will at all times comply with The Gas Resources Preservation Act and the provisions of the regulations of the Province are deemed to be incorporated in them. Such leases further provide that the natural gas would not be used, delivered or sold outside the Province without the consent of the





Lieutenant Governor in Council. Similar provisions are also contained in all gas leases issued since 1951. Thus both by statute and by the leases themselves which are issued by the Crown, the export of gas is controlled in this Province.

The competition of these 3 great pipe line projects has already raised the price of gas at the well head from 10 3/4 cents when Trans-Canada first started to operate, to over 18 cents with periodic escalation provisions thereafter. The Province has been flooded with propaganda issued by the proposed exporters by which local public opinion is sought to be lulled into the belief that the people of this Province are taking no risk in permitting the export of the large quantities of gas to be so exported and that there are vast quantities of gas sufficient to satisfy the local as well as the export requirements of the enormous populations such proposed exporters seek to serve.

It is the purpose of this summary to show that if the requirements of this Province and the rest of Canada are met there is no substantial surplus for export elsewhere.

Natural gas is not reproductive in character.

In this respect it differs from water power which results from constant creation. It follows that if any mistake is made with regard to the calculation of reserves or future recovery there is no way that such a mistake may be rectified. Therefore, before any permission for export is granted the Board must be satisfied beyond all reasonable doubt that the position of the consumers of this Province, both domestic and industrial, will not suffer.





By statute this Board may not grant a permit for export unless:

- (a) It is in the public interest;
- (b) It has regard to the present and future needs of persons within the Province, and
- (c) The established reserves, and
- (d) The trends of growth and discovery.
- (e) The exporter must offer gas at a fair price to local consumers.

Each one of these obligations must be fulfilled. The Board is not given any leeway to take any chances. It must be certain. It is surely not in the public interest of the people of this Province if the export of gas in any way places the consumers of this Province in any worse position than if the export was not permitted. It would seem to be certain that if no export was permitted Alberta consumers would still be getting gas at the previous well head price and the cost to consumers would only have been increased by the increased cost of labor and materials for gathering and distribution and for the operation of the utility companies.

While both Westcoast and Alberta and Southern purport to do lip service to the idea that Alberta consumers come first, their schemes only supply Alberta consumers proportionately with themselves while they are exhausting the fields which logically should supply the two utility companies. Therefore the two utility companies will be forced to share in more distant fields where gas is perforce more expensive. Neither export project has shown that any firm market exists for the vast quantities of sulphur and the lighter fractions - ethane, butane,





propane, etc., which will be produced. This waste will be just as great an economic loss as the loss which was sustained by the flaring of gas.

In addition there is the very serious problem as to the markets for Alberta oil which will be displaced by the use of natural gas. This seems to be a vicious circle. The production of oil and the other lighter fractions entails the production of gas and vice versa. All these substances must have satisfactory markets simultaneously.

It is now proposed to consider the estimates of reserves to see if either Westcoast or Alberta and Southern have sufficient reserves to justify an export permit.

Westcoast Estimated Reserves

	Royal Commission on Energy	Westcoast Ex.26
	Board's Staff	Alberta Southern Hearing
Savanna Creek	550.0 BCF	790.0 BCF
Calgary Devonian (Wabamun)	325.0	600.0 (estimated)
Wimbourne	<u>120.0</u>	<u>359.0</u>
	995.0	1749.0

The permit requirement of Westcoast is 1300 billion cubic feet.

Taking the Board's estimates, which it is submitted are the more realistic, it is obvious that Westcoast has not sufficient reserves to justify the granting of a permit for the amount of gas it desires to export.





Alberta and Southern Gas Company Limited

The reserves which this company desire to draw on are to be found detailed in Exhibit 13, Vol. IV A Revised, dated 17th March, 1958, Page 5. The following is a statement of these estimated reserves:

<u>Estimated Reserves</u>	Board's Staff	Alberta and Southern
	BCF	R. E. Davis
		BCF
Crossfield	150.0	434.1
South Westeros	1000.0	1300.0
Home Glen - Rimby	150.0	150.0
Lobstick	not given	102.0
Lovett River	70.0	261.0
Buck Lake	100.0	268.5
Olds	60.0	205.5
Paddle River	17.0	66.4
Panther River	not given	240.0
Pembina	400.0	302.2
Pine Coulee	15.0	47.7
Pine Creek	200.0	370.0
Sarcee	150.0	153.9
Stolberg	45.0	213.0
Waterton -		
Castle River	700.0	971.0
Windfall	320.0	304.8
	<hr/>	<hr/>
	2377.0	5390.1

The permit requirement of Alberta and Southern is 4200 BCF.

It is submitted that having regard to the Board's Staff estimate of reserves Alberta and Southern has not sufficient reserves to meet its requirements of 4200 BCF.

TRENDS OF GROWTH

But it is stated that the foregoing figures do not allow for trends of growth and it is now proposed to examine this problem. In considering this we must examine the marketable gas reserves and market re-





quirements for the two local utilities namely, Northwestern Utilities Limited and Canadian Western Natural Gas Company Limited and the Canadian requirement of Trans-Canada.

It is submitted sufficient reserves must be available for Alberta and Canada before export to United States is permitted.

There are trends in two factors which must be considered. First, the trend in discovery of new reserves in Alberta; and secondly, the trend of the growth of the Canadian Market dependent upon those reserves.

The ten year period from 1st January, 1948, to 31st December, 1957, was a period of maximum discovery of reserves in Alberta.

The Oil and Gas Conservation Board, in its submission to the Royal Commission on Energy, shows in column 8 of Table M 3 of Appendix M that the initial disposable reserves up to the end of the year 1947 amounted to 5888 BCF. At the 31st December 1957, the corresponding figure amounted to 22,327 BCF. The difference amounted to 16,439 BCF, or an average discovery rate of 1640 BCF per year.

R. E. Davis, on Pages 10 and 11 Table 111 Revised of Volume IV D Revised, shows a comparable calculation. Up to the end of the year 1947 Mr. Davis' figure was 5,790 BCF; and at the end of the year 1957 his figure was 24,321 BCF. The difference amounted to 18,531 BCF, or an average annual discovery rate of 1850 BCF.

Alberta and Southern in Exhibit 20, page 949 submitted a forecast of changes, year by year, in Canadian Reserves of disposable pipe/<sup>line</sup>gas. In Table 1 of this exhibit the Alberta rate of discovery





is given at 1800 BCF a year up to the year 1967, when a decline is shown which was continued until the year 1987, when the annual discovery was estimated at 600 BCF.

The City of Calgary submitted a paper by Warren Davis of Gulf Oil Company as Exhibit 43, page 1019 of the Westcoast Transmission Company Limited hearing. This paper indicated that by the year 1967 the discovery rate for both Oil and Gas in the United States would reach a peak, and thereafter decline, due in part to the high cost of development. This paper has a significant application to the discovery rate of natural gas along the foothill belt of Alberta, where drilling costs are exceptionally high; and where the marketable natural gas may approximate 50% of the production from wells such as those at Waterton - Castle River, Panther and 75% at Pincher Creek and Savanna Creek. The disposal of the by-products such as sulphur, without economic waste, is a problem which has yet to be solved.

The price of gas at the well head is an important factor in the trend of new discoveries, but volume of sales are of more importance. Eastern Canada would provide a market for approximately 4.5 times that of the San Francisco area. The price might be lower at the well head for methane by around 10% to 15% but it is possible that Trans-Canada could provide a market for ethane, propane, and butanes, something which could not be done by the Alberta and Southern. From Mr. Warren Davis' article and from the evidence of the Consolidated Mining and Smelting Company (Exhibit 19 in the Alberta and Southern hearing) too high a well head price would mean a drop in volume of sales to



industrial consumers who would go to alternate fuels. The end result would be detrimental to producers, domestic and commercial consumers of Alberta and Canada and most unfortunate for the Province of Alberta as the revenue from gas development would not grow, but decline.

The trend of the market for natural gas within Canada is more difficult to analyse but sufficient data is now available from Northwestern Utilities, Canadian Western, and Trans-Canada, all of which are dependent upon Alberta reserves. There are other consumers drawing gas from the Alberta reserves such as Westcoast Transmission in the Peace River area; Saskatchewan Power Commission from the area east of Medicine Hat; Montana Power Company from the southeast portion of the Province and a number of local utilities such as Medicine Hat, Hanna, Drumheller, Stettler, Leduc, Westlock, Hinton, Athabasca, Cold Lake and many smaller ones.

From Exhibit 24 of Canadian Western in the Westcoast hearing, Northwestern Utilities would use 55.0 BCF and Canadian Western 40.7 BCF in the year 1959.

From Exhibit 47, page 1136, in the Westcoast hearing present and potential Canadian export natural gas markets of Trans-Canada, on the page marked Exhibit 6, projected annual gas sales by Trans-Canada to Canadian markets. The 1st November 1958 to 31st October 1959 requirement amounted to 92.4 BCF. The total for the three utilities, Northwestern Utilities, Canadian Western and Trans-Canada would amount to 55.0 plus 40.7 plus 92.4, a total of 188.1 BCF, approximately, for the year 1959.





By 1969 the same three companies would require 101.6 plus 68.7 plus 444.8, a total of 615.1 BCF.

By 1979 the same market would absorb 135.0 plus 94.4 plus 859.3, a total of 1088.7 BCF.

From Table I, Exhibit 20 of the Alberta and Southern it will be noted that the projected discovery rate for Alberta would be 1330 BCF by 1979.

By 1989 consumption for Northwestern Utilities is estimated at 162.2 BCF, Canadian Western at 117.6 BCF, and Trans-Canada's Canadian requirement is given as 1,210.7 BCF. The total 1490.5 BCF is far above the discovery rate of 600 BCF given for 1986 in Exhibit 20, Table I of the Alberta and Southern.

It is necessary to consider if Alberta has sufficient gas to supply the needs of the Province and the needs of Canada for a thirty year period.

By 1988 the two utilities, Northwestern and Canadian Western will have used 3461 and 2424 BCF and Trans-Canada 18,753 BCF, a total of 24,638 BCF. There is about 21,000 BCF of disposable gas reserves available in the Province of Alberta as of 1st January 1958. Of this amount some 2,000 BCF cubic feet have been dedicated to Medicine Hat, Saskatchewan Power Commission, Montana Power Company and Westcoast Transmission Company Limited, as well as to small communities in the Province. About another 1,000 BCF is classed as beyond economic reach of a pipe line, or too small to connect to a pipe line. There are another 3,000 billion cubic feet which may or may not be commercially





productive. Fields like the Wabamun member of Devonian at Calgary, Okotoks, and Irricana, which have a 35% sulphur dioxide content, depend upon sale of sulphur for revenue to carry cost of production and treating plants. Other fields in this class are Waterton - Castle River, Windfall, Pine Creek and Panther River.

The remaining reserve of 15,000 BCF will in the future be increased by new discoveries. These discoveries should follow the trend of the past few years with the largest percentage of new discoveries containing a high acid gas content, particularly hydrogen sulphide.

The reserve requirement would be adequate for Canadian needs for ten years, provided the discoveries were all gas fields that could be used, that is, they were not gas cap gas associated with the conservation of crude oil and would not necessitate wastage of large amounts of ethane, propane, or butanes, or large amounts of sulphur, and also providing that the volume of raw gas produced per well was sufficient to permit enough marketable gas to be processed and sold, to pay the producer a profit.

The history of discoveries in the past five years has not been encouraging with regard to sulphur. There is not a market for between 1,400,000 and 2,000,000 long tons of sulphur a year at this date. Further discoveries of fields with a high hydrogen sulphide content along the foothills of Alberta, which add to the sulphur production, would present an even more difficult sulphur marketing problem.



Once the discovery rate begins to fall and that is suggested in Exhibit 20 of Alberta and Southern by the year 1967, there is no doubt that the margin between adequate disposable reserves and market requirement will close very rapidly as the market requirement is steadily increasing, as shown in Exhibit 24 of the Canadian Western, Exhibit 17 of the City of Calgary, and by Exhibit 47 of Trans-Canada, page 1136 of the transcript in the Westcoast hearing.

The exhibits mentioned above indicate that the peak load deliverability will reach 5,219.5 MMCF a day in the year 1988. This figure has been arrived at by extending Exhibit 24 from 1986 to 1988 and by taking the figure of 3,496.5 MMCF from table named Exhibit 7 in the Trans-Canada Pipe Lines Limited Exhibit 47. The respective figures for peak load are Northwestern Utilities 981.0 MMCF per day, Canadian Western 742 MMCF a day, plus 3496.5 MMCF for Trans-Canada, a total of 5,219.5 MMCF a day for the year 1988.

It is of interest to note that Alberta and Southern propose a reserve of 5,390.1 BCF to deliver 450 MMCF a day over a period of twenty-five years. This is a reserve of 1197 billion cubic feet of reserves for each 100 MMCF a day of deliverability. The Westcoast Transmission Company propose a peak load of 200 MMCF a day from a reserve estimated by Westcoast at 1800 BCF or 100 MMCF per day of peak deliverability for each 900 BCF of reserves. This peak load demand was based on operating load factor of over 85%, largely due to the high sulphur content of the reserves.

The question of how much reserve of natural gas must be in the





ground ready to produce, which means fully proven reserves with wells gathering lines, treating plants and transmission lines connected by the year 1988, is a matter of judgment. All associated gas connected with oil production would have to be deducted. All dedicated markets, such as local markets in Alberta, Medicine Hat is an example, would have to be deducted. Allowance would have to be made for all storage fields in Alberta, which would reduce the amount of reserves required. The load factor of the market must be considered.

In line with evidence presented in Exhibit 17 of City of Calgary Carbon hearing, Canadian Western would require an additional 330 MMCF a day for peak load by 1988. Northwestern Utilities Limited, it is estimated, would require 500 MMCF a day after all storage fields were deducted and Trans-Canada would require the full amount of 3,496.5 MMCF. This figure could be much higher if the Quebec and Montreal extension market is added. On the basis set out the total peak day demand of marketable gas would certainly not be less than 4,326 MMCF per day by 1988.

On the basis of 1000 BCF of reserves for every 100 MMCF of peak day demand the reserve in the ground to supply Alberta and the peak day demand in Saskatchewan, Manitoba and Eastern Canada would amount to 43,260 BCF of marketable gas.

How much disposable gas must then be discovered in Alberta to provide deliverability and supply the needs of the Province of Alberta and of Canada in the next thirty years?





It has been noted that some 15,000 BCF is available for Northwestern Utilities, Canadian Western and Trans-Canada in 1958. These three utilities, it is estimated, will use 24,638 BCF by the year 1988. The total quantity of disposable gas ready for market to be discovered must therefore be 24,638 plus 43,260 less 15,000, or 52,898 BCF. On an annual basis this amounts to an annual discovery of marketable gas of 1,763 BCF, on the average for thirty years. This is much higher than the discovery rate of 1,485 BCF projected by Alberta and Southern in Exhibit 20, Table I, page 949 of transcript dated 26th March, 1958. It is also higher than the average discovery rate of 1,640 BCF per year for the past ten years shown in data submitted to the Royal Commission on Energy by the Staff of the Board.

All the evidence available indicates that the rate of discovery in Alberta will decline during the next thirty years.

It must be concluded therefore that any export of gas to the United States must be taken from reserves needed for markets in Canada or to deliver that gas to markets in Alberta or Canada by 1988. It is submitted that Alberta consumers must be protected as to future supplies and deliverability and that after Alberta the needs of Canada must come before the market demands of consumers in the United States.



Marketable Reserves which are now available to  
Canadian Western System

Natural gas reserves available for consumers in southern Alberta as of 1st January, 1958, have been estimated as follows:  
(All measurements in billions of cubic feet BCF at 14.4 psia and 60°F)

	<u>Royal Comm. on Energy Board's Staff</u>	<u>Alta. South. Hearing Exh.13 Revised</u>	<u>Westcoast Hearing Exh.38 Revised, Exh.42</u>
Turner Valley	340.0 (Staff)	272.0 (Davis)	340.0 (City)
Jumping Pound	518.0 (Staff)	505.8 (Davis)	517.0 (City)
Bow Island and Foremost	37.0 (Staff)	32.0 (Davis)	32.0 (City)
Carbon	203.0 (Staff)	206.6 (Davis)	206.0 (City)
	1098.0	1016.4	1095.0

It should be noted in explanation of the above that 75% of the Carbon reserve should be deducted if it is used as a cushion for storage gas, and all of the reserves in Bow Island and Foremost storage fields.

It should be further noted that the availability of the reserves and the price now being paid per MCF is as follows:

Turner Valley:      Order No. 43 dated 11th September, 1948, of the  
                         Natural Gas Utilities Board, fixing a price of  
                         10.75¢ per standard MCF from Turner Valley.





Jumping Pound:       Contract Alberta and Southern Exhibit between Canadian Western Natural Gas Co. Ltd. and Shell Oil Co. Ltd., dated 1st January, 1954, and amended 22nd November, 1956, fixing a price of 10.75¢ per MCF and quantities to be delivered up to 14th May, 1962.

Bow Island  
Foremost:           Purchase contracts and leases to Canadian Western Natural Gas Co. Ltd.

Carbon:             Under consideration by Oil and Gas Conservation Board.

Additional gas fields have been discovered close to Calgary. Some fields such as Sundre, Harmattan, Westward Ho, and Crossfield are associated with crude oil. Production of gas cap gas will therefore be delayed until the oil has been produced. Other fields such as Okotoks, Calgary, Wimbourne and Irricana produce gas from the Wabamun member of the Devonian, which contains a very high percentage - around 35% - of hydrogen sulphide gas.

If the sulphur cannot be sold at a profit these fields must be considered noncommercial at this date. The wells from Wabamun are small on the average. The cost of the average well is over \$260,000.00. Because of hydrate formation they are one-horizon wells, and the cost of production is high. Consumers of gas in Southern Alberta cannot rely upon a gas supply from these fields



because of the problem of marketing the sulphur.

There is a wide difference of opinion as to the marketable reserves in many of the new fields based upon a limited number of wells drilled to date.

A number of abbreviations have been used in the following table. 'Staff' means the Board's staff estimate as given before the Royal Commission on Energy; 'W.C.' means Westcoast Transmission Company Limited; 'A.S.' means Alberta and Southern Gas Company Limited; 'City' means City of Calgary; 'BCF' means billions of cubic feet measured at 14.4 psia and 60°F.

MARKETABLE RESERVE ESTIMATES COMPARED

	<u>Board's Staff</u>	<u>Westcoast</u>	<u>R. E. Davis</u>	<u>City</u>
	BCF	BCF	BCF	BCF
Crossfield	150.0 Staff	228.0 A.S. Exh.26	434.1 A.S. Exh.13	150.0 City Exh.38
Calgary- Devonian	325.0 Staff	595.8 A.S. Exh.26	500.0 A.S. Exh.13	405.0 City W.C. Ex. 38
Sarcee	150.0 Staff	150.0 A.S. Exh.26	153.9 A.S. Exh.13	150.0 City W.C. Ex.38
Okotoks	135.0 Staff	135.0 A.S.	205.8 A.S. Exh.13	135.0 City W.C. Exh.38
South- Westerose	1000.0 Staff	1527.3 A.S. Exh.26	1300.0 A.S. Exh.13	1000.0 City
	1760.0	2636.1	2593.8	1840.0
Elkton gas Sundre, Westward Ho, Olds, Harmattan and Calgary	1102.0 Staff	1660.1 A.S. Exh.26	not given	1150.0 City Exh.38
	2862.0	4296.2		2990.0





The weight of evidence indicates that the lower estimates are the logical ones to accept until more wells are drilled in each new field and until there is a record of the pressure drop from actual production in each field.

Consumers of gas in Southern Alberta have to depend upon the proven reserves for their future supply of fuel. It is contended that gas reserves, intended for use by Canadian Western consumers, should not be included directly or indirectly in any plan to export gas to the United States.

#### DELIVERABILITY

The deliverability of gas for consumers of Southern Alberta depends upon the amount and kind of gas reserves in each reservoir, the number of wells actually drilled on each structure, the absolute open flow of the average well on each separate structure, the rate of decline in pounds per unit of gas produced on each structure, the treating plant facilities available, the size of transmission lines, load factor, and finally the purpose of the gas field. Bow Island, Foremost, and perhaps Carbon may be in time entirely used as storage fields to be produced during the coldest days of the year. At the present date the approximate cost of storing gas, that is pumping it into storage and reproducing it, costs around 11 cents per MCF. Cost therefore is a limiting factor in the use of storage fields for peak load purposes. The 11 cents cost does not include any allowance for purchase of the gas, or for purchase of the storage area.



Turner Valley for a limited period of under three years has the reserves and the facilities to deliver 95 million cubic feet a day. Jumping Pound can produce and deliver 90 million cubic feet a day, also for a limited period of under ten years. Bow Island and Foremost used as storage fields can continue to produce a peak load of 55 million cubic feet a day. Carbon has not yet been fully developed, and recent data is not encouraging, but Carbon may be able to produce from 100 to 120 million cubic feet a day, when used as storage area. It will be most expensive peak load gas, because of the need to maintain such a large cushion of gas in the reservoir.

The total deliverability from presently connected reserves, including Carbon, is therefore 360 million cubic feet per day for the next four or five years.

The Sarcee field gas reserve is small, too small to warrant a separate treating plant for removal of acid gases when the Madison Natural Gas Co. Ltd. treating plant has both the facilities and capacity available to handle the by-products in this gas. The Sarcee gas reserve would maintain the peak load capacity of the Madison plant at Turner Valley for approximately five additional years. This is a case where existing treating facilities and capacity are the governing factors in deliverability.

By the year 1964 a large and new source of supply of marketable gas for Southern Alberta will be required to provide both deliverability and base load.





The consumers of gas in Calgary and Southern Alberta reject the plan of depending upon any contract combined with export of gas to the United States as a prime source of supply of base load, or peak load gas. The basis of the objection is the excessive cost of the gas, secondly the consumers of Alberta are entitled to independent sources of supply in no way connected with the operations of export pipe lines.

The consumers of gas in Southern Alberta desire to rely upon the Gas Resources Preservation Act, as it may be amended by the Legislature of the Province of Alberta from time to time, rather than upon any contract with a company owned and controlled in a foreign country.

The City of Calgary has therefore requested that low acid content gas fields, such as Sarcee and the Elkton in the Sundre - Westward Ho - Harmattan - Olds - Crossfield - Calgary fields be reserved for the consumers of Southern Alberta.

A new treating plant would be required in the year 1964. This plant would have to be expanded from time to time, as the associated gas from the oil fields in the area becomes available.

There is no actual evidence to indicate that sulphur can be sold from the Wimbourne, Calgary and Okotoks fields. It may be sold, or some of it may be sold. Consumers of gas cannot assume that it will be sold, and for this reason cannot depend upon these fields for deliverability of either base load, or peak load gas. Consumers of gas should not subsidize the production of sulphur.



Some additional source of supply must be allocated to make a supply of gas certain for consumers in Southern Alberta. Such a source of supply must be flexible enough to provide gas at a load factor much lower than the 80% load factor required from sulphur producing fields by 1964.

The only adequate large supply available at this date is South Westeros. It is quite possible that this field will be required in part by Trans-Canada but it is also necessary to consider that Calgary may need a part of the gas in this field should the associated gas at Crossfield be delayed for many years after 1964.

The evidence is that assuming a modest increase in the price of gas during the period from this date to 1963, the requirements of the Canadian Western system would be around 2300 BCF for a thirty year period. The annual consumption in 1987 would amount to 116.5 BCF, and the peak load would amount to 725 MMCF a day. Of this peak load present reserves and storage fields plus contemplated storage fields would take care of 250 MMCF a day. These fields include Turner Valley, Sarcee, Jumping Pound, Carbon, Bow Island and Foremost.

Another 175 million cubic feet a day might be provided from the Elkton in Sundre - Harmattan - Olds - Crossfield and Calgary, which would leave some 300 MMCF a day, which must be provided from another source, or sources. South Westeros might supply 100 MMCF a day. It might also be well to note that part of this 300 MMCF per day will





be needed by the year 1970 to the extent of 50 MMCF a day.

Assuming that there is a valid relationship between reserves and deliverability, and taking South Westeros as an example, 1000 BCF of reserves might provide a steady deliverability over a period of years of 100 MMCF per day. Then 300 MMCF of deliverability would require 3000 BCF of reserves commencing in part with the year 1970. The 3000 BCF would be in addition to all presently connected reserves, such as Turner Valley and Jumping Pound, plus all the reserves from the Elkton formation in the Sundre - Westward Ho - Harmattan - Olds - Crossfield - Calgary area.

In any deliverability table it is absolutely necessary to spread the deliverability from any field over a sufficient number of years to amortize the investment in treating plants, gathering lines, wells, and provide a steady market for by-products such as the light fractions propane and the butanes, sulphur, and possibly even crude oil. This can only be done by a combination of annual withdrawal in billions of cubic feet, and a peak load deliverability based upon the price consumers, especially industrial consumers, are willing to pay.

The price of gas can be raised to the point where industrial consumers will seek and use alternate fuels. There would be little point in forcing Alberta industrial consumers to use other fuels in order to export gas to the United States. In other words, the domestic and commercial consumers of gas in Southern Alberta would pay a high price for gas, and industrial consumers would be forced to use other fuels in order to export gas to San Francisco.



Price of Gas to Consumers in Southern Alberta

Under the contract between Alberta and Southern and Canadian Western Natural Gas, and North Western Utilities, given in Exhibit 3, Alberta and Southern hearing, gas from fields which are now, and have been, for many years supplying the consumers of Southern Alberta may be sold by Canadian Western to Alberta and Southern for export to San Francisco. Such a sale or sales of gas would be from rapidly diminishing reserves which are close to Calgary, and at a price much below that which Alberta and Southern has negotiated during the past few months, as shown in Volume III of the Alberta and Southern submission.

The 10 3/4¢ per standard thousand cubic feet at the "gate" or downstream side of the scrubbing plants was arranged either by contract, or by order of the Natural Gas Utilities Board years ago. All consumers on the Canadian Western system supplied from these sources have an interest in the 10 3/4¢ price.

The investment in wells, transmission lines, gathering lines, and treating plants was made years ago. Any benefit from the investment should be shared by producers and consumers in Alberta and not by the consumers in California.

With regard to the prices for gas agreed to be paid by Alberta and Southern it is to be noted that no producer had gone into the box to show that these prices were required due to losses which would be sustained at present prices or that further exploratory work would not continue without such prices, nor have these producers





demonstrated that the profits received from the oil produced from the wells already drilled are sufficient to provide profitable exploratory operations.

#### Reservation of Fields

Some considerable point was sought to be made on cross-examination relative to the position of the consumers receiving gas from Canadian Western that certain fields (which have been supplying this utility with gas for years and other sources in the close neighbourhood) should be kept available for this utility. It was suggested that this would be most unfair to certain producers as they would be asked to keep their gas in the ground for long periods of time, but Mr. Davies pointed out that while these fields were to be reserved for the sole use of this utility it was expected the gas would be used in orderly sequence of production as quickly as available. On the other hand, it is to be observed that many of the fields under contract to Alberta and Southern will not have their gas taken for any purpose for ten or fifteen years.

Between Alberta and Southern and Westcoast all of the foothills fields now discovered, or which may be discovered, are now under firm contract or option to one or other of these companies and additional supplies for Canada can only be obtained by co-operating with Alberta and Southern.

#### The Agreement between Alberta and Southern and the two Utilities

The agreement of August 9th between Alberta and Southern and Canadian Western Natural Gas Company Limited is a most undesirable



arrangement from the standpoint of the Alberta consumers for the following reasons:-

- (a) Gas must be taken at a 70% load factor by the Utilities or a heavy penalty is payable;
- (b) The utilities are to pay appropriate transmission charges without any definition thereof.
- (c) The supplies of gas for industrial consumers have been specifically limited under 1(b) and Schedule A. This requirement is in direct conflict with the provisions of The Gas Resources Preservation Act. It limits the future industrial growth of Southern Alberta.
- (d) 1.3 <sup>times average field price</sup> must be paid for peak load gas. No rational explanation was given for this increased charge. Its existence ends all pretensions that Alberta and Southern is supplying gas at cost.
- (e) The Utilities may supply gas at their discretion to Alberta and Southern at the weighted average field price of the Utilities. Since the Utilities are paying less for their gas than Alberta and Southern this would provide a means for the supplying of cheap gas to Alberta and Southern from gas reserves which should be available for the Utilities.
- (f) It is submitted that a contract of this nature would not have been made had both parties been dealing at arm's length.





- (g) The terms of arrangement between an export company and a utility in Alberta should be settled by the Conservation Board and not by private treaty between the export company and the utility.

Alberta & Southern Gas Company Limited

Alberta and Southern which is a subsidiary of Pacific Gas & Electric has entered into all of the contracts to purchase gas and the contract with the two Utility Companies. It has, however, no assets whatsoever, save the amount which has been given to it by Pacific Gas & Electric for pre-incorporation expenses. It will also be the Company which will deal with the Alberta Trunk Line Company.

The position taken by Pacific Gas & Electric on the hearing is that it would not guarantee performance by Alberta and Southern because it did not wish to become involved in the Canadian end of this project. Should it be determined for any reason to discontinue the taking of gas from Alberta - a situation which might arise if large new fields were discovered in the United States or Mexico - there are no assets of Alberta and Southern which would be available to enforce any contracts it has entered into. Moreover, as it is intended to operate as a non-profit organization, it will not even pay income tax to the Dominion Government.

Recapitulation and Summary

It is submitted that:

1. Alberta and Southern has contracted reserves of gas for export



to the United States which are needed by the consumers of gas in Calgary.

2. Alberta and Southern has paid too high a price for this gas, as contracts are not based upon the cost of production.

3. Alberta and Southern has contracted for reserves without any provision being made for orderly disposal of the light fractions ethane, propane, butane and sulphur by-products.

4. All the reserves near Calgary such as Sarcee, Crossfield, Olds, and South Westeros, contracted by Alberta and Southern are the natural reserves for Calgary by reason of their location, type of gas, i.e. low acid content gas, and relative freedom from a long period of delay as associated with crude oil production.

5. The cost of gas for export to the United States should not be permitted to change the price paid by Alberta consumers under any contracts or arrangements now in existence, nor should it be reflected in the cost of gas to consumers in Alberta in the future. The price paid for gas by Alberta consumers should be on exactly the same basis as if no export had been permitted.

6. Alberta and Southern has applied for a permit to remove 4,200 billion cubic feet from the Province of Alberta to foreign markets over the twenty-five years beginning late in 1960. In order to justify such export from present proven Alberta reserves this Company has used reserves at present dedicated to consumers of gas in Alberta plus reserves adjacent to the Calgary market. These reserves such as Olds, Crossfield, and Sarcee are of a type suit-





able for marketing in Alberta with its low load factor market.

Without the reserves, such as Pembina, Lobstick, South West-rose, Olds, Crossfield and Sarcee the Alberta and Southern does not have under contract sufficient proven reserves to deliver 450 million cubic feet a day, and produce 164 billion cubic feet a year for twenty-five years, commencing in 1960.

7. The agreement between Alberta and Southern and the local Utilities does not protect the local Utilities nor the consumers of Alberta.

8. It is therefore contended that Alberta and Southern should not be granted a permit to export gas from Alberta to the United States.

9. Westcoast does not have sufficient proven reserves under contract in the Savanna Creek, Calgary Devonian and Wimbourne fields in order to fulfil the requirement of the export permit applied for of 1300 billion cubic feet over the next twenty-five years.

10. It is further stated that sufficient proof has not been produced to show that sulphur can be marketed at a price of \$16.00 a ton, which is given as the cost of production of sulphur. In the event that sulphur cannot be marketed the gas from the three fields mentioned cannot be produced commercially. Westcoast should not be granted a permit to export gas to the United States from Savanna Creek, Calgary and Wimbourne gas fields.

11. There are not more reserves than sufficient to satisfy the Canadian market including Alberta, and therefore, Trans-Canada's application, insofar as it relates to export to the United States, should be refused.



In the original material filed on behalf of the City of Calgary it was indicated that this City does not object to the export of gas as such. It will be seen from the above that it does not object to export of gas to the rest of Canada. So far as export of gas to the United States is concerned, if subsequent discoveries over and above the present trends of growth make additional substantial quantities of gas available, export of gas to the United States may at such time become practicable but the same is not warranted at the present time.

Wherever in this Summary reference is made to the City of Calgary it is intended to include all of the localities served by the Canadian Western system.

All of which is respectfully submitted.

DATED at Calgary, Alberta, this 10th day of April, 1958.

S. J. HELMAN

of Counsel for the City of Calgary.









